DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PANAMA

DESIGN OF THE WASTEWATER INTERCEPTION, TREATMENT AND DISPOSAL SYSTEM FOR PANAMA CITY

(TC-03-04-03-7)

PLAN OF OPERATIONS

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BASIC SOCIOECONOMIC DATA

For basic socioeconomic data, including public debt information, please refer to the following address:

http://www.iadb.org/RES/index.cfm?fuseaction=externallinks.countrydata

INFORMATION AVAILABLE IN THE FILES OF RE2

PREPARATION:

1. Basic Engineering Designs for the Wastewater Interception, Treatment and Disposal System for Panama City
2. Environmental Impact Assessment
3. IDAAN Institutional Strengthening Study -- Administrative, Commercial and Financial Aspects

EXECUTION:

Terms of Reference for the Basic Engineering Designs for the Wastewater Interception, Treatment and Disposal System for Panama City

Terms of Reference for the Environmental Impact Assessment

Terms of Reference for IDAAN's Institutional Strengthening Study

ABBREVIATIONS

CESI	Committee for Environment and Social Impact
ERSP	Public Utilities Regulatory Entity
IDAAN	National Aqueducts and Sewerage Institute
JBIC	Japan Bank for International Cooperation
JCF	Japanese Trust Fund for Consultancy Services
UCP	Project Coordination Unit
UTPP	Technical and Public Policies Unit

PLAN OF OPERATIONS
For Nonreimbursable Technical Cooperation Programs

DESIGN OF THE WASTEWATER INTERCEPTION, TREATMENT AND DISPOSAL SYSTEM FOR PANAMA CITY
(TC-03-04-03-7)

I. EXECUTIVE SUMMARY

Beneficiary: Ministry of Health (Republic of Panama)

Executing agency: Ministry of Health, through the Project's Coordination Unit (UCP) with the participation of the National Institute of Aqueducts and Sewerage Systems (IDAAN).

Target Beneficiaries: The final beneficiaries of this TC will be the inhabitants of the Panama City Metropolitan Area, as the ensuing project will finance a wastewater management system that will in turn improve environmental and sanitary conditions in the rivers and the Panama Bay.

The project will also benefit IDAAN, the entity in charge of potable water and sewerage services in the metropolitan area, and the Ministry of Health, where the Project Coordinating Unit (UCP), responsible for the execution of the *Panama Bay Sanitation Project* (PN-0062), is located.

Financing:

IDB: (Japanese Trust Fund for Consultancy Services-JCF):	US$1,500,000
Local Counterpart:	US$ 375,000
Total:	US$1,875,000

Objectives: The objective of this technical cooperation is twofold: (i) to design a wastewater interception, treatment and disposal system, and thus support the government efforts to decrease the levels of contamination in Panama City's rivers, coastal zones, and the Panama Bay; and (ii) to develop an institutional strengthening program for the institution in charge of sanitation services. This technical cooperation will help to prepare the *Panama Bay Sanitation Project* (PN-0062), which will also improve the conditions of the urban poor by expanding sewerage services to lower income neighborhoods, as well as by reducing pollution in city rivers and creeks and in the Panama Bay.

Description: To respond to the stated objectives, this technical cooperation includes five components:

(i) **Design of the Wastewater Transport System.** The transport

system will be composed of interceptors, pumping stations and force mains that will carry the wastewater to the treatment site located near the Juan Diaz River, east of the city. The design will draw information from previous studies and will include topographical surveys, alignment and location, definition of right-of-ways, hydraulic capacity estimations, geotechnical assessments, and definition of equipment needs and material requirements. Also included are estimations of construction costs and associated maintenance expenses.

(ii) **Design of the Wastewater Treatment System.** The size, hydraulic capacity, modality and degree of treatment will be established based on the review of studies and on the findings of this work. In addition to construction costs, the studies will also determine expected operation and maintenance costs for the proposed facility.

(iii) **Design of the Sludge and Wastewater Disposal Systems**. This component will design the evacuation and discharge system for treated plant effluent into the Panama Bay. This work will also consider alternatives for sludge disposal and for the handling of other solid by-products resulting from the treatment process. As in previous cases, construction, operation and maintenance costs will be estimated.

(iv) **Environmental Impact Assessment**. Making use of previous environmental evaluations and taking into account the current implementation strategy for the proposed works, this component will update the project description, reassess its environmental and social impacts, propose mitigation measures, carry out public consultations, and develop a monitoring plan.

(v) **Financial Analysis and Institutional Strengthening.** An analysis of IDAAN's managerial, operational, commercial and financial conditions will be carried out. This analysis will take into account new financial and operational demands generated by the proposed project and other planned investments. A financial model will be developed in parallel with an evaluation of the current billing system. The need for a sewerage charge and other cost recovery mechanisms will be considered. An institutional strengthening plan will be developed, along with a set of benchmarks and goals to be reached over a period of three years.

Execution timetable:

Execution Period: 18 months

Disbursement Period: 20 months

Special contractual conditions:

None

Exceptions to Bank Policies and Procedures:

None

Environmental and social review:

The technical cooperation and the *Panama Bay Sanitation Project* (PN-0062), which this TC will help to prepare, seek to correct undesirable

environmental and social conditions, resulting from the direct discharge of untreated sewage into the urban rivers and coastal areas of Panama City. Therefore, the environmental and social impacts from the treatment plant, and from interception and disposal system, will be predominantly positive. The parcel of land identified as the most probable site for the treatment plant is currently an open field in a sparsely populated area. Thus, no involuntary resettlements are expected. To avoid potential negative impacts as a result of the construction of civil works, the design of these facilities will include mitigation measures that will be part of the *Panama Bay Sanitation Project* financing. The studies currently under preparation and those proposed as part of this TC, in addition to identifying ways to minimize unintended negative consequences, will also recommend relevant environmental and social indicators, as well as an environmental management plan to facilitate monitoring of construction and operational activities. The Committee for Environment and Social Impact (CESI) reviewed the profile for this TC on July 17, 2003. The recommendation formulated on that occasion has been taken into account by making the environmental studies an integral part of this TC (see. par. 2.8, 3.6 and 4.1).

Coordination with other Official Development Finance Institutions:

The preparation of the technical aspects of this TC were closely coordinated with the Japan Bank of International Cooperation (JBIC). Meetings were also held with the US Trade Development Agency to establish the objectives and scope of previous studies, financed by that institution (see paragraph 2.6). IDB and JBIC will co-finance the *Panama Bay Sanitation Project* (PN-0062), which this TC will help to prepare (see paragraphs 2.7 and 5.4).

II. BACKGROUND AND JUSTIFICATION

A. Environmental Conditions

2.1 Panama City Metropolitan Area's population --nearly 950,000 inhabitants according to the 2000 census-- and the industries located within its boundaries produce approximately 280,000 m^3 of wastewater daily. This volume of liquid wastes is discharged untreated into urban rivers or directly into the Panama Bay along its shore. Consequently, excessively high organic and bacterial contamination levels are commonly observed in the rivers and along the urban shore, often generating anaerobic and odor-emanating conditions.[1] There is currently a heightened concern among city residents about the condition of the Panama bay because of the visible deterioration of its waters and the potential risks to public health.

B. Institutional Framework

2.2 Sewerage services in the metropolitan area are the responsibility of the National Aqueducts and Sewerage Institute (IDAAN), a public autonomous entity created in 1961. IDAAN also supplies drinking water and provides sanitation services to all towns with more than 1,500 inhabitants, serving approximately 1.8 million people countrywide. The potable water network in the metropolitan area covers 94% of the population, delivering approximately 500 liters per person per day. This exceedingly large amount is mainly attributable to high physical and commercial losses --estimated at 40% of the water produced--, but also to the low price of services, an outdated tariff structure, and a low percentage of customers charged by actual consumption –only 52% of house connections are metered. As a consequence, neighborhoods located far from the distribution points suffer from frequent rationing. The sewerage network covers 70% to 80% of the metropolitan area, thus leaving approximately 200,000 residents unserved, mostly in peripheral, low-income neighborhoods. The network lacks an adequate wastewater interception, treatment or disposal system, thus causing environmental degradation in receiving watercourses, such as the Matasnillo, Tapias, Matias Hernandez, and Juan Diaz Rivers and the Panama Bay.

2.3 IDAAN's current operational and financial situation needs urgent improvement to transform it into a responsive and efficient institution. In the year 2001, for example, IDAAN's revenues were approximately US$61 million, while its expenses reached US$72 million. The average water rate (US$0.26/$m^3$), unadjusted since 1982, is insufficient to cover all the company's administrative and operational expenses, and does not include charges for the sewerage services provided. Furthermore its accounting, billing and collection systems also need improvement.

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[1] For example, values close to 60 mg BOD_5/l are observed in the final stretches of the Tapias and Matías Hernández Rivers, reflecting high concentrations of organic matter. These values increase during the dry season due to the rivers' diminished dilution capacity. As a result, some areas of the bay and particularly those closer to the coastline, present dissolved oxygen concentrations lower than 1.0 mg/l. Large concentrations of fecal coliform bacteria have also been observed, in amounts that range from 1,000 to 100,000 NMP/100 ml, depending on the closeness to the river mouths.

C. Reform Process

2.4 Acknowledging the problems of the sector, in 1997 the Government established a new institutional and regulatory framework for the sector (Decree-Law No. 2 from January 7th, 1997). The Government also created a Public Utilities Regulatory Entity (ERSP) to oversee energy, telecommunications, potable water and sanitation services (Law No. 26 from 1996). Undoubtedly, these two decrees constitute significant progress over the previous legal framework but they still need to be fully applied and implemented to maximize their benefits.

2.5 In 1998, the Government took preparatory steps to involve the private sector in IDAAN's management, initially through a *corporatization* process and later by means of a concession. However, the administration that came to power in 1999 suspended this process and delegated on a Presidential Commission the preparation of a proposal to reorganize IDAAN, maintaining it as a public institution. The Commission, chaired by the Nation's Second Vice President, and comprised by several members of the cabinet, explored different types of modalities to reform IDAAN's management, proposing in the end a new organic law for the institution. This law (No.77 of 2000) was published in the *Gaceta Oficial* on December 31, 2001, subrogating Law No.98 of 1961. The most noteworthy aspect of the new law is the increase in the number of representatives from civil society in the Board of Directors --from three to five-- and the accompanying decrease in the number of cabinet ministers --from four to one. Civil society representatives will be appointed by the executive branch from a short list presented by the participating organizations, and will be ratified by the legislative branch[2].

D. Development of the Technical Cooperation Proposed

2.6 The preparation of a Master Plan for the Sanitation of Panama City and Panama Bay was carried out between 1998 and 2000, as part of IDAAN's *Restructuring Support Program* (IDB Loan 1029/OC-PN). This study estimated the investments required to expand the sewerage system and provide proper treatment and disposal at US$326 million, including a 6.5 km ocean outfall. Also included, was a complete environmental impact evaluation of the solution proposed. However, additional feasibility studies, carried out in 2002 to comply with a new effluent discharge standard, modified the existing proposal increasing the degree of treatment and relocating the treatment and disposal site. More detailed studies were carried out in 2003, with financing from the US Trade Development Agency, to evaluate different treatment sites, estimate infiltration and wastewater flows, consider sludge disposal options, redefine project boundaries, and propose a construction timetable. These studies have been useful in defining a technically sound and financially realistic strategy for project execution, which takes account into IDAAN's current

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[2] The Board of Directors was comprised of four ministers (Health, Housing, Public Works, and Planning and Economic Policies) and three representatives from civil organizations (*Asociación de Propietarios de Inmuebles de Panamá, Asociación de Propietarios de Inmuebles de Colón* y *Sociedad Panameña de Ingenieros y Arquitectos*). The new Board is made up of the Minister of Health (the chair), a representative of the Executive Branch, and five members from the following organizations: *Asociación Panameña de Ejecutivos de Empresas, Sociedad Panameña de Ingenieros y Arquitectos, Asociación de Propietarios de Inmuebles, Cámara Panameña de la Construcción* and a workers organization.

weaknesses, the Government's fiscal and debt limitations, and the high construction and operational costs associated with the works proposed.

2.7 Based on this strategy, the complete project would be implemented, in two stages, over a period of at least 9 years (see table). The first stage (2005-2010) would be financed through the *Panama Bay Sanitation Project* (PN-0062), which is in itself comprised of two phases. The initial phase (2005-2007) will concentrate on IDAAN's institutional strengthening and on priority sewerage works. The second phase (2008-2010) will finance the initial modules of the treatment plant, and the required disposal works, co-financed by the Japan Bank for International Cooperation (JBIC). The second stage (2011-2013) will complete construction of the secondary treatment plant and will also include additional sewerage network expansion and interception works.

Implementation Stages and Financing

Stage	Phase	Years	Local	BID	JBIC	Total
			(in US$ millions)			
I	**1**	2005-2007	5	45		**50**
	2	2008-2010	15	45	90	**150**
II		2011-2013	10	50	60	**120**
Total			**30**	**140**	**150**	**320**

2.8 This phased strategy will promote incremental improvements in IDAAN's managerial, operational and financial conditions. Benchmarks on institutional performance will be developed and monitored at each phase of the process. Assistance to achieve preset goals and attain overall institutional sustainability will be included in each phase of the project.

2.9 In order to properly define the scope and components of the *Panama Bay Sanitation Project* (PN-0062), a set of pre-investment studies, to be conducted during 2003-2005, was established: (i) engineering designs for the expansion of the sewerage network to lower income neighborhoods and for the construction of intercepting sewers along urban rivers, including and environmental impact evaluation of the works proposed (currently under preparation; US$3.07 million contract); (ii) a complementary environmental impact assessment to complete the evaluation of the project's environmental and social effects; (iii) a financial analysis and institutional strengthening study to develop a strategy --and benchmarks-- for the gradual improvement of IDAAN's financial and administrative situation (to be implemented during the initial 2005-2007 phase as a condition for phase II approval); and (iv) basic engineering designs for the treatment and disposal system, including interception and pumping stations along the coastal zone, with construction starting during the second phase of Stage I and ending with Stage II. The first study is being financed through an existing IDB project (Loan 1029/OC-PN) and the last three would be part of this technical cooperation.

E. Strategy and Justification of the Bank's Participation

2.10 The Bank's strategy in Panama seeks to achieve equitable and sustainable economic and social growth. The strategy's four main objectives are: (i) alleviate poverty and increase equity; (ii) support reforms that improve competitiveness and growth; (iii) promote

sustainable development; and (iv) strengthen governance and increase transparency. The *Panama Bay Sanitation Project* (PN-0062), which this TC will help to prepare, is consistent with the strategy, by: (i) promoting improvements and expansion of a public service, especially in low income neighborhoods; (ii) contributing to the protection of natural resources, such as urban rivers and ocean bays; and (iii) supporting sector modernization and institutional development.

III. PROGRAM DESCRIPTION

A. Objectives

3.1 The objective of this technical cooperation is twofold: (i) to design a wastewater interception, treatment and disposal system, and thus support the government efforts to decrease the levels of contamination in Panama City's rivers, coastal zones, and the Panama Bay; and (ii) to develop an institutional strengthening program for the institution in charge of sanitation services. This technical cooperation will help prepare the *Panama Bay Sanitation Project* (PN-0062), which will also improve the conditions of the urban poor by expanding sewerage services to lower income neighborhoods, as well as by reducing pollution in city rivers and creeks and in the Panama Bay.

B. Description

3.2 To respond to the stated objectives, this technical cooperation includes five components: (i) basic design of the wastewater interception and transport system along the coast; (ii) design of the secondary treatment plant near the Juan Diaz River; (iii) design of the sludge disposal and effluent discharge systems; (iv) environmental assessment of the project's environmental impacts and (v) IDAAN's financial analysis and institutional strengthening.

1. Component 1. Design of the Wastewater Transport System

3.3 The wastewater transport system will be composed of interceptors, pumping stations and force mains that will carry the wastewater to the treatment site located near the Juan Diaz River, east of the city. The design will draw information from previous studies and will include topographical surveys, alignment and location, definition of right-of-ways, hydraulic capacity estimations, geotechnical assessments, and definition of equipment needs and material requirements. The Master Plan and the previous feasibility studies estimated the total length of this conveyance system to be approximately 18.6 Km and that up to six pumping stations, with capacities ranging from 0.65 to 1.2 m^3/s, would be required. Along with the basic engineering designs, the construction costs and the associated maintenance expenses will be calculated.

2. Component 2. Design of the Wastewater Treatment System

3.4 Basic engineering designs of the treatment plant, which will be located east of the city, near the mouth of the Juan Diaz River, will be executed under this component. The size, hydraulic capacity, modality and degree of treatment will be established based on the

review of studies and on the findings of this study. The design will include the possibility of developing the plant in a modular fashion to adjust to gradual increase in the sewerage system's coverage and to the population contributing to the system. It has been estimated that the design capacity to treat all the wastewater from the metropolitan area – with a population of 1.12 million people by the year 2020-- should be 4.5 m3/s. In addition to construction costs, the studies will also determine expected operation and maintenance costs for the proposed facility.

3. Component 3. Design of the Sludge and Wastewater Disposal Systems

3.5 This component will provide financing for the designs of the evacuation and discharge system for treated plant effluent into the Panama Bay. Different options have been considered in preliminary studies, including an open channel and an underwater outfall, whose length has yet to be determined. The component will also consider alternatives for sludge disposal and for the handling of other solid residues resulting from the treatment process. As in the previous cases, construction, operation and maintenance costs will be estimated.

4. Component 4. Environmental Impact Assessment

3.6 Making use of previous environmental evaluations and taking into account the current implementation strategy for the proposed works, this component will update the project description, reassess its environmental and social impacts, propose mitigation measures, carry out public consultations, and develop a monitoring plan.

5. Component 5. Financial Analysis and Institutional Strengthening

3.7 3.7 This component will include analyses of IDAAN's managerial, operational, commercial and financial conditions. These analyses will take into account new financial and operational demands generated by the proposed project and other investments planned around the country. A financial model will be developed in parallel with an evaluation of the current billing system. The need for a sewerage charge and other cost recovery mechanisms will also be considered. Under this component an institutional strengthening plan will be developed, along with a set of benchmarks and goals to be reached over a period of three years. Attaining these benchmarks will thus become a condition for approval of the second phase of the *Panama Bay Sanitation Project* (PN-0062).

IV. COST AND FINANCING

4.1 The total estimated cost of the proposed technical cooperation is US$1,875,000. The Japanese Trust Fund for Consultancy Services (JCF) will contribute with 80% of this amount (US$1,5 million) and will cover all consultancy services related to the design of the wastewater interception, treatment and disposal system, including honoraria, travel, per diem, overhead and contingencies. The local counterpart (20%) will cover the costs associated with a complementary environmental evaluation and with IDAAN's financial analysis and institutional strengthening study. The local counterpart will also include in

kind assistance from the Project Coordination Unit (UCP) staff to the consulting firms involved. The estimated budget is shown bellow (see also Annex I):

PROPOSED BUDGET

Type of Expense	JCF	Local	Total
1. Basic Engineering Designs (components 1 - 3)	960,000		960,000
2. Overhead Consultancy Firm (35%)	340,000		340,000
3. Travel Expenses (travel and per diem)	125,000		125,000
4. Environmental Impact Assessment (component 4)		90,000	90,000
5. Institutional Strengthening and Financial Evaluation (Component 5)		257,000	257,000
General Support		28,000	8,000
Contingencies	75,000		75,000
Total	**1,500,000**	**375,000**	**1,875,000**

V. EXECUTING AGENCY AND MECHANISM

5.1 According to the Letter of Agreement dated January 27, 1995, under which the Japanese Consultancy Fund (JCF) was established, the Bank shall carry out the hiring of the services necessary for the execution of components 1 – 3 of this technical cooperation. These activities will be conducted by the Country Office in Panama with support from the Environment and Natural Resources Management Division of Region 2 (RE2/EN2).

5.2 To assure the government's active participation, to promote a sense of ownership, and to benefit from the government's local perspective, the Bank promoted the formation on an inter-institutional overseeing committee comprised of the following entities: (i) the Project Coordination Unit (UCP), created in 2002 to assist on all activities related to the preparation of the *Panama Bay Sanitation Project* (PN-0062), under the Ministry of Health; (ii) IDAAN, as the institution responsible for providing sanitation services in the project area; and (iii) the Technical and Public Policies Unit (UTPP), within the Ministry of Economics and Finance, which is responsible for hiring and supervising consulting activities financed under IDAAN's *Restructuring and Support Program* (IDB Loan 1029/OC-PN), as is the case with components 4 and 5. The overseeing committee has operated satisfactorily during the pre-qualification stage carried out for consulting firms interested in components 1 – 3 and in the hiring process already conducted, with IDB financing, for the design of the sewerage network (see paragraph 1.8).

5.3 To carry out all activities planned, three specialized consulting firms, or consortia, will be hired as explained above. The basic designs (components 1 –3) will be prepared under one contract over a period of eight months. The environmental evaluation will be prepared within a four-month period and the institutional strengthening study will be conducted over a period of six months. The total execution period to complete all TC activities, including consultant selection and hiring, is expected to take 18 months. The pre-qualification stage for the basic designs has already been conducted, resulting in a

short list of five firms/consortia. The selection process for the institutional strengthening study was recently finished and the contract with the selected firm is ready for signature. Invitations to qualified firms to submit proposals for the environmental impact evaluation will be sent out shortly. The terms of reference (TOR) for the three studies were prepared in consultation with all the agencies involved.

5.4 To facilitate expected co-financing activities related to the *Panama Bay Sanitation Project* (see paragraphs 2.7 and 2.8), the Bank has been closely coordinating tasks with the Japan Bank for International Cooperation. The information produced under this TC will me made available to this institution in order to maintain timely consultations during the following stages of project preparation.

VI. MONITORING AND EVALUATION

6.1 The UCP, under the advice and support of the overseeing committee described in paragraph 5.2, will have direct technical responsibility for promoting and supervising progress on the three studies proposed. Each study, once contracted, will have its timetable with submittal dates for intermediate and final reports, as requested in their respective TOR. The project team and the Country Office will closely monitor these activities and lend support as necessary. The project team will also review partial and final reports and will submit comments to the UCP. Considering the studies' significance for the proper and timely preparation of the *Panama Bay Sanitation Project* (PN-0062), JBIC staff assigned to this operation are also expected to monitor progress on the studies.

VII. PROGRAM BENEFITS AND RISKS

A. Benefits

7.1 The final beneficiaries of this TC will be the inhabitants of the Panama City Metropolitan Area, as the ensuing project will finance a wastewater management system that will in turn improve environmental and sanitary conditions in the rivers and the Panama Bay.

7.2 The project will also benefit IDAAN, the entity in charge of potable water and sewerage services in the metropolitan area, and the Ministry of Health, where the Project Coordinating Unit (UCP), responsible for the execution of the *Panama Bay Sanitation Project* (PN-0062), is located.

B. Risks

7.3 The activities planned for the final stages of the *Panama Bay Sanitation Project* preparation process, including this TC, coincide with a presidential election period in Panama. This technical cooperation, and other studies that will be executed in parallel, are complementary, requiring continuity and coordination. Despite this circumstance, which could potentially cause delays or a review of government priorities, the team

recommends that the preparation process continue as proposed, for two reasons: (i) there exists a broad social consensus on the necessity and urgency of the Bay's protection activities, as can be witnessed by the great number of academic and professional forums held on this topic and by the public declarations frequently made through various media during the last few years; and (ii) the long time required to adequately prepare pre-investment studies and develop technical solutions. To minimize the risks mentioned above, the studies included under this TC are all considered of high priority under any circumstance and will be based on carefully prepared terms of reference. The new administration will also have an opportunity to discuss the studies' orientation, conclusions and recommendations since a significant part of the execution period will occur under the new government. Public consultation and a fluid dialog with civil society representatives will also play a major role in assuring acceptability.

VIII. ENVIRONMENTAL AND SOCIAL REVIEW

8.1 The technical cooperation and the *Panama Bay Sanitation Project* (PN-0062) seek to correct undesirable environmental and social conditions, resulting from the direct discharge of untreated sewage into the urban rivers and coastal areas of Panama City. Therefore, the environmental and social impacts from the treatment plant, and from interception and disposal system, will be predominantly positive. The parcel of land identified as the most probable site for the treatment plant is currently an open field in a sparsely populated area. Thus, no involuntary resettlements are expected. To avoid potential negative impacts as a result of the construction of civil works, the design of these facilities will include mitigation measures that must be part of the *Panama Bay Sanitation Project* financing. The studies currently under preparation and those proposed as part of this TC, in addition to identifying ways to minimize unintended negative consequences, will also recommend relevant environmental and social indicators, as well as an environmental management plan to facilitate monitoring of construction and operational activities.

DESIGN OF THE WASTEWATER INTERCEPTION, TREATMENT AND DISPOSAL SYSTEM FOR PANAMA CITY

TC-03-04-03-7

CERTIFICATION

I certify that this operation was approved for financing by the donor of the Japanese Trust Fund for Consultancy Services through a memorandum dated June 30, 2003 and signed by Keisuke Nakamura Deputy Manager, RE2/FSS. Also, I certify that resources from the Japanese Trust Fund for Consultancy Services are available for up to US$1,500,000 in order to finance the activities described and budgeted in this document. The commitment and disbursement of these resources shall be made only by the Bank in US$ dollars. The same currency shall be used to stipulate the remuneration and payments to consultants, except that local consultants working in their own borrowing member country shall have their remuneration defined and paid in the currency of that country. No resources of the Fund shall be made available to cover amounts greater than the amount certified herein above for the implementation of this Plan of Operations. Amounts greater than the certified amount may arise from commitments on contracts denominated in a currency other than the Fund currency, resulting in currency exchange rate differences, for which the Fund is not at risk.

Goro Mutsura
Chief RE2/CEP

Date

LOGICAL FRAMEWORK
DESIGN OF THE WASTEWATER INTERCEPTION, TREATMENT AND DISPOSAL SYSTEM FOR PANAMA CITY

(TC-03-04-03-7)

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
GOAL			
Build and operate the first phase of a wastewater interception, treatment and disposal system for Panama City that helps clean the Panama bay.	• A volume equivalent to about 50% of the wastewater produced in year 2005 in the Panama City Metropolitan Area is collected and treated. • Financial resources to cover the facilities' operation and maintenance costs are readily available. • Technical capacity to operate and maintain the facilities is contracted by IDAAN.	• Reports form Project Executing Unit. • IDAAN's financial reports	• Financial stability of IDAAN and/or of the entity in charged of operating the system is maintained. • System is operated and maintained according to good engineering practices. • Other sources of contamination are intercepted and treated.
PURPOSE			
Project proposal to obtain financing for the construction of a wastewater interception, treatment and disposal system for Panama City that is institutionally, financially, environmentally, and socially viable.	• Project report document ready to be presented to financial institutions.	• Consultants' final reports. • IDB and JBIC project teams' reports.	• Financial and institutional measures to strengthen IDAAN are adopted. • Loans for project construction from financial institutions (JBIC/IDB) are approved. • Local counterpart funds are allocated.
COMPONENTS			
1. Wastewater Transport System designed.	• Consultant's final reports accepted by the Bank and local counterpart.	• Consultants' final reports. • IDB project team's reports. • Reports by Project Executing Unit.	New Panamanian Government maintains project priority and accepts the results of the studies.

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS/RISKS
2. Wastewater Treatment System designed.	• Consultant's final report accepted by the Bank and local counterpart.	• Consultants' final reports. • IDB project team's reports. • Reports by Project Executing Unit.	New Panamanian Government maintains project priority and accepts the results of the studies.
3. Sludge and Wastewater Disposal Systems designed.	• Consultant's final report accepted by the Bank and local counterpart.	• Consultants' final reports. • IDB project team's reports. • Reports by Project Executing Unit.	New Panamanian Government maintains project priority and accepts the results of the studies.
4. Environmental Impact Assessment Accepted by National Environmental Authority.	• Consultant's final report accepted by the Bank. • Approval of report by National Environmental Authority (ANAM).	• Consultants' final reports. • IDB project team's reports. • Note produced by ANAM approving final report.	New Panamanian Government maintains project priority and accepts the results of the studies.
5. Financial Analysis of IDAAN finalized and Institutional Strengthening measures identified.	• Consultant's report accepted by the Bank and local counterparts.	• Consultants' final reports. • IDB project team's reports. • Reports by Project Executing Unit.	New Panamanian Government maintains project priority and accepts the results of the studies.
ACTIVITIES			
1. Contract with specialized engineering consulting firm to carry our components 1 – 3. 2. Contract with environmental consulting firm to carry out component 4. 3. Contract with institutional development firm to carry out component 5.	• US$1,500,000 eight-month consulting contract. • US$90,000 four-month consulting contract. • US$257,000 six-month consulting contract.	• IDB project team's reports. • Reports by Project Executing Unit.	• Financial resources to cover costs of the studies are allocated. • Consulting companies are capable of executing the studies.

PANAMA METROPOLITAN AREA
DESIGN OF THE WASTEWATER INTERCEPTION, TREATMENT AND DISPOSAL SYSTEM FOR PANAMA CITY
(TC-03-04-03-7)
Cost Estimate

Type of Expense	Person-months (1)	Estimated Cost (2)	JCF	Local Counterpart	TOTAL
Professional Services for Basic Eng. Design (components 1 - 3)					**1,500.000**
Honoraria		960,000	960,000		
Direction / Coordination	10.0	128,000			
Sanitary engineering	24.3	195,000			
Hydraulics	20.2	162,000			
Soils / foundations	11.8	95,000			
Mechanical / equipment	13.1	105,000			
Structural engineering	6.2	50,000			
Economic analysis	10.6	85,000			
Environmental analysis	15.0	120,000			
Cost evaluation	2.5	20,000			
Overhead (35%)		340,000	340,000		
Travel expenses		125,000	125,000		
International Travel		75,000			
Local travel		2,000			
Per diem		48,000			
Contingencies (5%)		75,000	75,000		
Professional services for Environmental Impact Assessment (component 4)					**90,000**
Honoraria		57,000		57,000	
Direction/ Coordination	4.0	20,000			
Urban Development	1.0	4,000			
Sanitary Engineering	1.0	4,000			
Environmental Law	0.5	2,000			
Environmental impacts	4.0	16,000			
Human impacts	2.5	9,000			
Archeological/ historic	0.5	2,000			
Overhead (35%)		31,500		31,500	
Transportation Expenses		1,500		1,500	
Professional Services for Institutional Strengthening and Financial Evaluation (component 5).					**257,000**
Honoraria		**154,000**		**154,000**	
Direction / Coordination	3.5	28,000			
Sanitary engineering	4.0	26,000			
Tariff analysis	4.5	24,750			
Economic Analysis	5.0	27,500			
Institutional Analysis	5.5	30,250			
Financial Analysis	1.5	6,000			
Environmental analysis	0.6	2,400			
Training/capacity building	1.5	6,000			
Quality control	0.78	3,100			
Overhead (32%)		81,000		81,000	
Direct Costs (includes travel and per diem)		22,000		22,000	
General support (assistance from UCP, office space, communications, etc.)		**28,000**		**28,000**	**28,000**
TOTAL			**1,500,000**	**375,000**	**1,875,000**

(1) The amounts in the **person-months column** constitute an estimate of the time that will be dedicated to each activity. In the case of components 1 – 3, many of these activities can be carried out, under the supervision of the principal firm (Japanese), by qualified local professionals or by a local firm, which usually pay lower salaries than international firms.

(2) For the purpose of calculating the **Estimated Cost column**, in the case of components 1 –3, monthly honoraria for Japanese engineers and other professionals were assumed to vary between 500,000 and 1,500,000 Yens, depending on the years of experience (exchange rate: 117.8 Yens per US dollars). Local engineers are estimated to earn approximately one third to one half of these amounts. Based on these estimations, an honorarium of US$12,800 was assumed for the project director and US$8,000 per month for the rest of the engineers, economists, environmentalists, etc. in the team.

(3) The consulting firms interested in conducting these studies will prepare their own estimations based on their in-house capabilities, and their arrangements with local consultants when applicable

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